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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,668	08/07/2003	Juergen Hoffmann	033275-408	8893
21839	7590	01/03/2006	EXAMINER	
BUCHANAN INGERSOLL PC (INCLUDING BURNS, DOANE, SWECKER & MATHIS) POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			TRIEU, THAI BA	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 01/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/635,668

Applicant(s)

HOFFMANN ET AL.

Examiner

Thai-Ba Trieu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-12 is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/993,545.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 21, 2005 has been entered.

Claims 7 and 10-12 were amended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uji (Patent Number 5,417,053); in view of Urbach et al. (Patent Number 5,329,758).

Uji discloses a gas turbine set, with a cooling air system through which at least one cooling air mass flow (20, 21, 23) flows from a compressor (1) to thermally highly loaded components of the gas turbine set, wherein means (10, 36) for increasing the pressure of flowing cooling air are arranged in a cooling air duct of the cooling air system (See Figures 1-2 and 4);

wherein the means for increasing the pressure are ejectors (36)^o
operating with a working fluid (See Figure 4);

wherein the working fluid is a steam mass flow (Coming from 22 to
10) (See Figure 4);

wherein the working fluid flow is an air mass flow branched off from
the compressor (1) at a point of higher pressure (at a point where the line
21 is branched off from line 23) (See Figures 1-2)

wherein means (14) for adjusting the working medium mass flow
are arranged in a supply duct for the working medium (See Figures 1-2);
and

the gas turbine set being a gas turbine set with sequential combustion (See
Figures 1-2).

However, Uji fails to disclose the percentage of the working fluid flow being less
than 20% of a driven cooling air mass flow.

Urbach teaches that it is conventional in the steam augmented Gas turbine art, to
utilize the working fluid mass flow being less than 20%, 10%, and 5% of a driven cooling
air mass flow (See Column 3, lines 21-28).

It would have been obvious to one having ordinary skill in the art at that time the
invention was made, to have utilized the percentage of the working fluid flow being less
than 20% of a driven cooling air mass flow, as taught by Urbach, to improve the
efficiency of the Uji device.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uji (Patent Number 5,417,053); in view of Shouman (Patent Number 6,089,011).

Uji discloses a gas turbine set, with a cooling air system through which at least one cooling air mass flow (20, 21, 23) flows from a compressor (1) to thermally highly loaded components of the gas turbine set, wherein means (10, 36) for increasing the pressure of flowing cooling air are arranged in a cooling air duct of the cooling air system (See Figures 1-2 and 4);

wherein the means for increasing the pressure are ejectors (36) operating with a working fluid (See Figure 4);

wherein the working fluid is a steam mass flow (Coming from 22 to 10) (See Figure 4);

wherein the working fluid flow is an air mass flow branched off from the compressor (1) at a point of higher pressure (at a point where the line 21 is branched off from line 23) (See Figures 1-2)

wherein means (14) for adjusting the working medium mass flow are arranged in a supply duct for the working medium (See Figures 1-2);
and

the gas turbine set being a gas turbine set with sequential combustion (See Figures 1-2).

However, Uji fails to disclose the percentage of the working fluid flow being less than 20% of a driven cooling air mass flow.

Shouman teaches that it is conventional in the water injected stoichiometric combustion gas turbine engine art, to utilize the working fluid mass flow being less than 20% of a driven cooling air mass flow (See Column 2, lines 1-10).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the percentage of the working fluid flow being less than 20% of a driven cooling air mass flow, as taught by Shouman, to improve the efficiency of the Uji device.

Allowable Subject Matter

Claims **7- 12** are allowed.

Response to Arguments

Applicant's arguments filed March 16, 2005 have been fully considered but they are not persuasive. Accordingly, claims 1-12 are pending.

1. Regarding applicants' arguments set forth on page 5, Paragraphs 5-6, and Page 6, Paragraphs 1-2, with respect to the rejection of Claims 1-6 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,417,053, hereinafter Uji, in view of U.S. Patent No. 5,329,758, hereinafter Urbach, applicants state that Urbach discloses a steam-augmented gas turbine and is not related to cooling air mass flow, and the portion of Urbach identified in the Official Action, column 3, lines 21-28, states that "some commercial version of steam augmented gas turbines accept steam in amounts up to 16% of the compressor air flow..." (emphasis added). Thus, this discussion is

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not related to cooling air mass flow. Rather, the passage refers to power augmentation steam mass flow related to the compressor mass flow of a gas turbine. Therefore, one having ordinary skill in the art would have had no motivation to implement the claimed relationship between a working fluid mass flow and driven cooling air mass flow in light of the disclosure in Urbach.

The examiner respectfully disagrees with the applicants. Since a cooling system (17) as disclosed by the applicants in the instant application is a line, a duct, a passage, a conduit, a ducting, or a pipe wherein the compressed air, after being compressed by the compressor, is passing through treated as a cooling air mass flow of the so-called cooling air system to cool down the thermally high loaded components (combustor and turbine) of the gas turbine set; therefore, the compressor air flow of Urbach is treated as a cooling air mass flow. Then, the steam is augmented/increased an amount up to 16% of the compressor air flow/ the cooling air mass flow; in the other words the augmented/increased steam amount is less than 20%, which is read on the limitation as claimed in claim 1.

Thus, the use of the steam-compressed air ratio is an amount up to 16% of the compressor air flow/ the cooling air mass flow (less than 20%), as taught by Urbach, would have improved the efficiency of the Uji's device, and would have directed to provide a gas turbine set as recited in claim 1.

2. Regarding applicants' arguments set forth on page 7, in the first paragraph, applicants assert that Urbach, in column 9, lines 39-40 describes that the percentage of

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water (i.e. with respect to air) injected into the combustor will be about 47.5 %; therefore, Urbach teach away from the claimed subject matter.

The examiner respectfully disagrees with the applicants, since Urbach clearly teaches that the injection of large quantities of steam into the combustor requires an increase in the cross sectional areas of the combustor and the subsequent turbine stages to accommodate the increases volume of flow (See Column 9, lines 27-40). Accordingly, with the percentage of steam increases/augments to about 47.5 %, the cross sectional areas of the combustor and the subsequent turbine stages need to be enlarged in order to accommodate the increases volume of flow, and to avoid choking, overspeeding, or damaging the system.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Hoffmann et al. (US Patent Number 6,640,550 B2) discloses gas turbo-group with cooling air system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
April 29, 2005



Thai-Ba Trieu
Primary Examiner
Art Unit 3748